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# 1 [Data remapping for design space optimization of embedded memory systems](#)

Rodric M. Rabbah, Krishna V. Palem

May 2003 **ACM Transactions on Embedded Computing Systems (TECS)**, Volume 2 Issue 2

Full text available: pdf(885.05 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In this article, we present a novel linear time algorithm for *data remapping*, that is, (i) lightweight; (ii) fully automated; and (iii) applicable in the context of pointer-centric programming languages with dynamic memory allocation support. All previous work in this area lacks one or more of these features. We proceed to demonstrate a *novel application of this algorithm as a key step in optimizing the design of an embedded memory system*. Specifically, we show that by virtue of lo ...

**Keywords:** Design space exploration, caches, compiler optimization, data remapping, embedded systems, memory hierarchy, memory subsystem

# 2 [Rendering II: Second order image statistics in computer graphics](#)

Erik Reinhard, Peter Shirley, Michael Ashikhmin, Tom Troscianko

August 2004 **Proceedings of the 1st Symposium on Applied perception in graphics and visualization**

Full text available: pdf(586.77 KB)

Additional Information: [full citation](#), [abstract](#), [references](#)

The class of all natural images is an extremely small fraction of all possible images. Some of the structure of natural images can be modeled statistically, revealing striking regularities. Moreover, the human visual system appears to be optimized to view natural images. Images that do not behave statistically as natural images are harder for the human visual system to interpret. This paper reviews second order image statistics as well as their implications for computer graphics. We show that th ...

# 3 [Managing battery lifetime with energy-aware adaptation](#)

Jason Flinn, M. Satyanarayanan

May 2004 **ACM Transactions on Computer Systems (TOCS)**, Volume 22 Issue 2

Full text available: pdf(1.61 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We demonstrate that a collaborative relationship between the operating system and applications can be used to meet user-specified goals for battery duration. We first describe

a novel profiling-based approach for accurately measuring application and system energy consumption. We then show how applications can dynamically modify their behavior to conserve energy. We extend the Linux operating system to yield battery lifetimes of user-specified duration. By monitoring energy supply and demand and ...

**Keywords:** Power management, adaptation

4 Neon: a single-chip 3D workstation graphics accelerator

Joel McCormack, Robert McNamara, Christopher Gianos, Larry Seiler, Norman P. Jouppi, Ken Correll

August 1998 **Proceedings of the ACM SIGGRAPH/EUROGRAPHICS workshop on Graphics hardware**

Full text available:  pdf(1.58 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**Keywords:** chunk rendering, direct rendering, graphics pipeline, level of detail, rasterization, texture cache, tile rendering

5 Resource management: Asynchronous wakeup for ad hoc networks

Rong Zheng, Jennifer C. Hou, Lui Sha

June 2003 **Proceedings of the 4th ACM international symposium on Mobile ad hoc networking & computing**

Full text available:  pdf(218.13 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Due to the slow advancement of battery technology, power management in wireless networks remains to be a critical issue. Asynchronous wakeup has the merits of not requiring global clock synchronization and being resilient to network dynamics. This paper presents a systematic approach to designing and implementing asynchronous wakeup mechanisms in ad hoc networks. The optimal wakeup schedule design can be formulated as a block design problem in combinatorics. We propose a neighbor discovery and s ...

**Keywords:** asynchronous wakeup, block design and ad hoc networks, power management

6 Navigating hierarchically clustered networks through fisheye and full-zoom methods

Doug Schaffer, Zhengping Zuo, Saul Greenberg, Lyn Bartram, John Dill, Shelli Dubs, Mark Roseman

June 1996 **ACM Transactions on Computer-Human Interaction (TOCHI)**, Volume 3 Issue 2


Full text available:  pdf(305.99 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

Many information structures are represented as two-dimensional networks (connected graphs) of links and nodes. Because these network tend to be large and quite complex, people often prefer to view part or all of the network at varying levels of detail. Hierarchical clustering provides a framework for viewing the network at different levels of detail by superimposing a hierarchy on it. Nodes are grouped into clusters, and clusters are themselves place into other clusters. Us ...

**Keywords:** data acquisition, fisheye views, hierarchically clustered graphs, information visualization, supervisory control

7 A structural view of the Cedar programming environment

Daniel C. Swinehart, Polle T. Zellweger, Richard J. Beach, Robert B. Hagmann  
August 1986 **ACM Transactions on Programming Languages and Systems (TOPLAS)**,  
Volume 8 Issue 4

Full text available:  pdf(6.32 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper presents an overview of the Cedar programming environment, focusing on its overall structure—that is, the major components of Cedar and the way they are organized. Cedar supports the development of programs written in a single programming language, also called Cedar. Its primary purpose is to increase the productivity of programmers whose activities include experimental programming and the development of prototype software systems for a high-performance personal computer. T ...

8 Papers: Off the wall: Focus plus context screens: combining display technology with visualization techniques

Patrick Baudisch, Nathaniel Good, Paul Stewart

November 2001 **Proceedings of the 14th annual ACM symposium on User interface software and technology**

Full text available:  pdf(1.39 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Computer users working with large visual documents, such as large layouts, blueprints, or maps perform tasks that require them to simultaneously access overview information while working on details. To avoid the need for zooming, users currently have to choose between using a sufficiently large screen or applying appropriate visualization techniques. Currently available hi-res "wall-size" screens, however, are cost-intensive, space-intensive, or both. Visualization techniques allow the user to m ...

**Keywords:** Display, fisheye view, focus plus context screen, mixed resolution, overview plus detail, video projector

9 "Composability": widening participation in music making for people with disabilities via music software and controller solutions

Tim Anderson, Clare Smith

April 1996 **Proceedings of the second annual ACM conference on Assistive technologies**

Full text available:  pdf(995.03 KB)


Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**Keywords:** MIDI, adaptive technology, composition, education, music, physical disability, visual impairment

10 The computer reaches out: the historical continuity of interface design

Jonathan Grudin

March 1990 **Proceedings of the SIGCHI conference on Human factors in computing systems: Empowering people**

Full text available:  pdf(1.16 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper examines the evolution of the focus of user interface research and development from the first production of commercial computer systems in the 1950s through the present. The term "user interface" was not needed in the beginning, when most users were engineers and programmers; it may again become inappropriate when more applications are written for groups than for individuals. But there is a continuity to the outward movement of the computer's interface to its external ...

11 Interaction techniques for ambiguity resolution in recognition-based interfaces

Jennifer Mankoff, Scott E. Hudson, Gregory D. Abowd

November 2000 **Proceedings of the 13th annual ACM symposium on User interface software and technology**

Full text available:  pdf(152.19 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

12 Feline: fast elliptical lines for anisotropic texture mapping

Joel McCormack, Ronald Perry, Keith I. Farkas, Norman P. Jouppi

July 1999 **Proceedings of the 26th annual conference on Computer graphics and interactive techniques**


Full text available:  pdf(5.55 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**Keywords:** anisotropic filtering, space-variant filtering, texture mapping

13 Debugging concurrent programs

Charles E. McDowell, David P. Helmbold

December 1989 **ACM Computing Surveys (CSUR)**, Volume 21 Issue 4


Full text available:  pdf(2.86 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

The main problems associated with debugging concurrent programs are increased complexity, the "probe effect," nonrepeatability, and the lack of a synchronized global clock. The probe effect refers to the fact that any attempt to observe the behavior of a distributed system may change the behavior of that system. For some parallel programs, different executions with the same data will result in different results even without any attempt to observe the behavior. Even when the behavior can be ...

14 Worlds within worlds: metaphors for exploring n-dimensional virtual worlds

S. K. Feiner, Clifford Beshers




August 1990 **Proceedings of the 3rd annual ACM SIGGRAPH symposium on User interface software and technology**

Full text available:  pdf(1.86 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

15 A widget framework for augmented interaction in SCAPE

Leonard D. Brown, Hong Hua, Chunyu Gao

November 2003 **Proceedings of the 16th annual ACM symposium on User interface software and technology**

Full text available:  pdf(8.29 MB)  mov(6:51 MIN)  wmv(6:51 MIN) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We have previously developed a collaborative infrastructure called SCAPE - an acronym for Stereoscopic Collaboration in Augmented and Projective Environments - that integrates the traditionally separate paradigms of virtual and augmented reality. In this paper, we extend SCAPE by formalizing its underlying mathematical framework and detailing three augmented Widgets constructed via this framework: CoCylinder, Magnifier, and CoCube. These devices promote intuitive ways of selecting, examining, an ...


**Keywords:** augmented reality (AR), head-mounted display (HMD), head-mounted projective display (HMPD), human computer Interaction (HCI), tangible user interface (TUI),

virtual reality (VR)

16 Spatial management of data

Christopher F. Herot

December 1980 **ACM Transactions on Database Systems (TODS)**, Volume 5 Issue 4

Full text available:  pdf(2.11 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Spatial data management is a technique for organizing and retrieving information by positioning it in a graphical data space (GDS). This graphical data space is viewed through a color raster-scan display which enables users to traverse the GDS surface or zoom into the image to obtain greater detail. In contrast to conventional database management systems, in which users access data by asking questions in a formal query language, a spatial data management system (SDMS) presents the informati ...

**Keywords:** computer graphics, database query languages, graphics languages, man-machine interaction

17 Semantic pointing: improving target acquisition with control-display ratio adaptation

Renaud Blanch, Yves Guiard, Michel Beaudouin-Lafon

April 2004 **Proceedings of the 2004 conference on Human factors in computing systems**

Full text available:  pdf(543.47 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We introduce semantic pointing, a novel interaction technique that improves target acquisition in graphical user interfaces (GUIs). Semantic pointing uses two independent sizes for each potential target presented to the user: one size in motor space adapted to its importance for the manipulation, and one size in visual space adapted to the amount of information it conveys. This decoupling between visual and motor size is achieved by changing the control-to-display ratio according to cursor dista ...

**Keywords:** Fitts' law, control-display ratio, graphical user interface, pointing, semantic pointing

18 An Interactive Graphics System for custom design

P. Carmody, A. Barone, J. Morrell, A. Weiner, J. Hennessy

June 1980 **Proceedings of the 17th conference on Design automation**

Full text available:  pdf(652.41 KB)


Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The Interactive Graphics System/370 (IGS/370) is one of a series of highly interactive programs 1,2 used extensively within IBM for the design of multiplanar chips, macros, modules, cards, and boards. The programs were developed for IBM's internal use and are not marketed by IBM. This paper describes the hardware and system software environment and the design functions, capacity and performance of IGS/370. The geometric descriptions and associated ...

19 Visual techniques for traditional and multimedia layouts

Jean Vanderdonckt, Xavier Gillo

June 1994 **Proceedings of the workshop on Advanced visual interfaces**

Full text available:  pdf(2.64 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Character User Interfaces (CUI) generally display only pieces of text and semi-graphical objects, whereas Graphical User Interfaces (GUI) display interaction objects (IO) such as icons, check boxes, list boxes, radio buttons and push buttons. Traditional GUI do not often go beyond such existing IO. Multimedia GUI add interactive objects such as pictures, images, video sequences that could serve as a base for sophisticated user interaction. All these types of user interfaces have in common t ...

**Keywords:** graphical applications, grid, interaction objects, interactive objects, layout, multimedia applications, visual interaction, visual interface design and management, visual placement, visual techniques

## 20 Indexing hypertext documents in context

Guy A. Boy

September 1991 **Proceedings of the third annual ACM conference on Hypertext**

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